Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) In a communications network, a method of verifying connectivity between network nodes, comprising, for each network node:

providing periodic time intervals,

counting elapsed periodic time intervals since transmission of a link integrity indication frame to produce a count for a network node, the link integrity indication frame being a frame which, when transmitted by ~~a~~ the network node, can be received by all other nodes on the communications network and which contains a source identifier that uniquely identifies a transmitting node;

receiving frames from one or more sending nodes and maintaining during each periodic time interval a node state status and current received frame source identifiers;

determining the node state status upon the expiration of a predetermined elapsed time; and

transmitting a link integrity indication frame based upon determining the node state status as not being indicative of having received frames from each of a plurality of sending nodes during the predetermined elapsed time interval;

wherein, when transmitted, the link integrity indication frame resets the count of each network node on the communications network.

2. (Original) The method of Claim 1, wherein the source identifier is a source address and the current received frame source identifier is a current received frame source address.

3. (Original) The method of Claim 2, wherein counting the elapsed periodic time intervals includes:

incrementing a counter every time a periodic time interval elapses and the network node has not sent a link integrity indication frame during the elapsed time interval, and

resetting the counter whenever the network node transmits a link integrity indication frame.

4. (Previously Presented) The method of Claim 2, wherein maintaining a node state status includes:

establishing a node initial state status upon receipt of a frame from another node on the network;

upon receiving a subsequent frame within the predetermined elapsed time interval, comparing the maintained current received frame source address with a subsequent frame source address, and

if the comparing indicates a same source address, the node state status remains unchanged, and

if the comparing indicates a different source address, the node state status changes to being indicative of having received frames from each of a plurality of sending nodes during the predetermined elapsed time interval and transmitting a link integrity indication frame is suppressed.

5. (Previously Presented) The method of Claim 2, wherein determining the node state status as not being indicative of having received frames from each of a plurality of sending nodes during the predetermined elapsed time interval includes providing a logic state machine having a plurality of states including a down state indicative of a non-functional network link and a plurality of up states indicative of functional network links, the states being transitional therebetween based upon predetermined network node status, expiration of periodic timing intervals and receipt of frames by the network node.

6. (Original) The method of Claim 2, wherein maintaining a current received frame source address includes recording the current received frame source address in a memory table.

7. (Original) The method of Claim 2, wherein the sending node is a node on a broadcast network.

8. (Original) The method of Claim 2, wherein the sending node is a node on a point-to-point network.

9. (Original) The method of Claim 2, wherein the communication network is a multi-layer protocol communication network.

10. (Original) The method of Claim 9, wherein the transmitting of a link integrity indication frame is performed

at a data link layer of the multi-layer protocol communication network.

11. (Original) The method of Claim 2, wherein the network nodes whose connectivity is being verified are connected by transmission medium from the group of telephone wire, shielded twisted pair, unshielded twisted pair, cable, power line, optical fiber, or wireless medium.

12. (Currently Amended) In a communications network, a link integrity apparatus for verifying connectivity between network nodes communicating over a transmission medium, comprising, for each network node:

a periodic time interval generator;

a counter system for counting elapsed periodic time intervals since transmission of a link integrity indication frame to produce a count for a network node, the link integrity indication frame being a frame which, when transmitted by ~~a~~ the network node, can be received by all other nodes on the communications network and which contains a source identifier that uniquely identifies a transmitting node;

a receiver coupled to the transmission medium for receiving frames from one or more sending nodes;

a storage system for maintaining during each periodic time interval a node state status and current received frame source identifiers;

logic circuitry coupled to the counter system, the storage system and the receiver, the logic circuitry determining the

node state status upon the expiration of a predetermined elapsed time interval a count of the periodic elapsed time intervals since transmission of a link integrity indication frame; and

a transmitter coupled to the logic circuitry and the transmission medium for transmitting a link integrity indication frame over the transmission medium based upon determining by the logic circuitry that the node state status as not being indicative of having received frames from each of a plurality of sending nodes during the predetermined elapsed time interval;

wherein, when transmitted, the link integrity indication frame resets the count of each network node on the communications network.

13. (Original) The link integrity apparatus of Claim 12, wherein the source identifier is a source address and the current received frame source identifier is a source address.

14. (Original) The link integrity apparatus of Claim 13, wherein the counter is incremented by the logic circuitry every time an elapsed time interval expires and the network node has not sent a link integrity indication frame during the elapsed time interval, and the counter is reset whenever the network node transmits a link integrity indication frame.

15. (Previously Presented) The link integrity apparatus of Claim 13, wherein the logic circuitry maintains node state status by:

establishing a node initial state status upon receipt of a frame from another node on the network;

upon receiving a subsequent frame within the predetermined elapsed time interval, comparing the maintained current received frame source address with a subsequent frame source address, and

if the comparing indicates a same source address, the node state status remains unchanged, and

if the comparing indicates a different source address, the node state status changes to being indicative of having received frames from each of a plurality of sending nodes during the predetermined elapsed time interval and transmitting a link integrity indication frame is suppressed.

16. (Original) The link integrity apparatus of Claim 13, wherein the logic circuitry functions as a logic state machine having a plurality of states including a down state indicative of a non-functional network link and a plurality of up states indicative of functional network links, the states being transitional therebetween based upon predetermined network node status, expiration of periodic timing intervals and receipt of frames by the network node.

17. (Original) The link integrity apparatus of Claim 13, wherein the memory storage system includes memory table for maintaining a current received frame source address.

18. (Original) The link integrity apparatus of Claim 13, wherein the sending node is a node on a broadcast network.

19. (Original) The link integrity apparatus of Claim 13, wherein the sending node is a node on a point-to-point network.

20. (Original) The link integrity apparatus of Claim 13, wherein the communication network is a multi-layer protocol communication network.

21. (Original) The link integrity apparatus of Claim 20, wherein the transmitting a link integrity indication frame is performed at a data link layer of the multi-layer protocol communication network.

22. (Original) The link integrity apparatus of Claim 13, wherein the network nodes whose connectivity is being verified are connected by transmission medium from the group of telephone wire, shielded twisted pair, unshielded twisted pair, cable, power line, optical fiber, or wireless medium.

23. - 42. (Canceled)

43. (Currently Amended) In a communications network, a method of verifying connectivity between network nodes, comprising, for each network node:

providing periodic time intervals[[,]];

counting elapsed periodic time intervals since transmission of a link integrity indication frame, the link integrity indication frame being a frame which, when transmitted by ~~a~~ the

network node, can be received by all other nodes on the communications network and which contains a source identifier that uniquely identifies a transmitting node;

receiving frames from one or more sending nodes and maintaining during each periodic time interval a node state status and current received frame source identifiers;

upon the expiration of a predetermined elapsed time interval determining the node state status and a count of the elapsed periodic time intervals since transmission of a link integrity indication frame; and

transmitting a link integrity indication frame based upon determining:

the node state status as being indicative of having received frames from each of a plurality of sending nodes during the predetermined elapsed time interval, and

the count of predetermined elapsed time intervals as being greater than a predefined count limit;

wherein, when transmitted, the link integrity indication frame resets the count of each network node on the communications network.

44. (Previously Presented) The method of Claim 43, wherein the source identifier is a source address and the current received frame source identifier is a current received frame source address.

45. (Previously Presented) The method of Claim 44, wherein counting the elapsed periodic time intervals includes:

incrementing a counter every time a periodic time interval elapses and the network node has not sent a link integrity indication frame during the elapsed time interval, and

resetting the counter whenever the network node transmits a link integrity indication frame.

46. (Previously Presented) The method of Claim 44, wherein maintaining a node state status includes:

establishing a node initial state status upon receipt of a frame from another node on the network;

upon receiving a subsequent frame within the predetermined elapsed time interval, comparing the maintained current received frame source address with a subsequent frame source address, and

if the comparing indicates a same source address, the node state status remains unchanged, and

if the comparing indicates a different source address, the node state status changes to being indicative of having received frames from each of a plurality of sending nodes during the predetermined elapsed time interval and transmitting a link integrity indication frame is suppressed.

47. (Previously Presented) The method of Claim 44, wherein determining the node state status as not being indicative of having received frames from each of a plurality of sending nodes during the predetermined elapsed time interval includes providing a logic state machine having a plurality of states including a down state indicative of a non-functional network link and a plurality of up states indicative of

functional network links, the states being transitional therebetween based upon predetermined network node status, expiration of periodic timing intervals and receipt of frames by the network node.

48. (Previously Presented) The method of Claim 44, wherein maintaining a current received frame source address includes recording the current received frame source address in a memory table.

49. (Previously Presented) The method of Claim 44, wherein the sending node is a node on a broadcast network.

50. (Previously Presented) The method of Claim 44, wherein the sending node is a node on a point-to-point network.

51. (Previously Presented) The method of Claim 44, wherein the communication network is a multi-layer protocol communication network.

52. (Previously Presented) The method of Claim 51, wherein the transmitting of a link integrity indication frame is performed at a data link layer of the multi-layer protocol communication network.

53. (Previously Presented) The method of Claim 44, wherein the network nodes whose connectivity is being verified are connected by transmission medium from the group of telephone

wire, shielded twisted pair, unshielded twisted pair, cable, power line, optical fiber, or wireless medium.

54. (Currently Amended) In a communications network, a link integrity apparatus for verifying connectivity between network nodes communicating over a transmission medium, comprising, for each network node:

a periodic time interval generator;

a counter system for counting elapsed periodic time intervals since transmission of a link integrity indication frame, the link integrity indication frame being a frame which, when transmitted by ~~a~~ the network node, can be received by all other nodes on the communications network and which contains a source identifier that uniquely identifies a transmitting node;

a receiver coupled to the transmission medium for receiving frames from one or more sending nodes;

a storage system for maintaining during each periodic time interval a node state status and current received frame source identifiers;

logic circuitry coupled to the counter system, the storage system and the receiver, the logic circuitry upon the expiration of a predetermined elapsed time interval determining the node state status and a count of the periodic elapsed time intervals since transmission of a link integrity indication frame; and

a transmitter coupled to the logic circuitry and the transmission medium for transmitting a link integrity indication frame over the transmission medium based upon determining by the logic circuitry that the node state status as being indicative

of having received frames from each of a plurality of sending nodes during the predetermined elapsed time interval, and the count of predetermined elapsed time intervals as being greater than a predefined count limit;

wherein, when transmitted, the link integrity indication frame resets the count of each network node on the communications network.

55. (Previously Presented) The link integrity apparatus of Claim 54, wherein the source identifier is a source address and the current received frame source identifier is a source address.

56. (Previously Presented) The link integrity apparatus of Claim 55, wherein the counter is incremented by the logic circuitry every time an elapsed time interval expires and the network node has not sent a link integrity indication frame during the elapsed time interval, and the counter is reset whenever the network node transmits a link integrity indication frame.

57. (Previously Presented) The link integrity apparatus of Claim 55, wherein the logic circuitry maintains node state status by:

establishing a node initial state status upon receipt of a frame from another node on the network;

upon receiving a subsequent frame within the predetermined elapsed time interval, comparing the maintained current received frame source address with a subsequent frame source address, and

if the comparing indicates a same source address, the node state status remains unchanged, and

if the comparing indicates a different source address, the node state status changes to being indicative of having received frames from each of a plurality of sending nodes during the predetermined elapsed time interval and transmitting a link integrity indication frame is suppressed.

58. (Previously Presented) The link integrity apparatus of Claim 55, wherein the logic circuitry functions as a logic state machine having a plurality of states including a down state indicative of a non-functional network link and a plurality of up states indicative of functional network links, the states being transitional therebetween based upon predetermined network node status, expiration of periodic timing intervals and receipt of frames by the network node.

59. (Previously Presented) The link integrity apparatus of Claim 55, wherein the memory storage system includes memory table for maintaining a current received frame source address.

60. (Previously Presented) The link integrity apparatus of Claim 55, wherein the sending node is a node on a broadcast network.

61. (Previously Presented) The link integrity apparatus of Claim 55, wherein the sending node is a node on a point-to-point network.

62. (Previously Presented) The link integrity apparatus of Claim 55, wherein the communication network is a multi-layer protocol communication network.

63. (Previously Presented) The link integrity apparatus of Claim 62, wherein the transmitting a link integrity indication frame is performed at a data link layer of the multi-layer protocol communication network.

64. (Previously Presented) The link integrity apparatus of Claim 55, wherein the network nodes whose connectivity is being verified are connected by transmission medium from the group of telephone wire, shielded twisted pair, unshielded twisted pair, cable, power line, optical fiber, or wireless medium.